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<p>(54) Title: OPTIMIZED INTERNET ADVERTISING USING HISTORY TO SELECT SITES</p> <p>(57) Abstract</p> <p>In a system that includes: (a) a web server system (16) which stores data bases of advertisements (16A) and viewer information (16B), (b) bidding agents (30A, 30B, and 30Z) which submit bids to display advertisements in view-ops which have certain specifications, and (c) bid selection logic (16C) which decides which bid to accept for each particular view-op. When a view-op occurs which meets the specifications in a bid, the view-op is further evaluated in terms of the comparative effectiveness of the particular advertisements on each of the sites on which the advertisement was previously displayed. The frequency of the advertisement is increased on sites that have proved effective and decreased on sites that have a lower effectiveness. The parameters are considered and evaluated on a real time basis to determine if a particular advertisement should be displayed in response to a particular view-op.</p>			
<pre> graph TD     HV[Human Viewer 10] --&gt; CB[Client Browser 11]     CB --&gt; WS[Web Site 12]     WS --&gt; AWSS[Advertising Web Server System 16]     AWSS --&gt; DAA[Data Base of Advertisements 16A]     AWSS --&gt; DBVI[Data Base of Viewer Info 16B]     AWSS --&gt; BSL[Bid Selection Logic 16C]     BSL --&gt; BA1[BIDDING AGENT 30A]     BSL --&gt; BA2[BIDDING AGENT 30B]     BSL --&gt; BA3[BIDDING AGENT 30Z]     BA1 --&gt; BIS[BID INPUT SYSTEM 18]     BA2 --&gt; BIS     BA3 --&gt; BIS     </pre>			

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1       **OPTIMIZED INTERNET ADVERTISING USING HISTORY TO SELECT SITES**

2

3       **Field of the Invention:**

4       The present invention relates to computer networks and more particularly to a system  
5       and method for presenting advertisements on the screens of computers that are  
6       connected to the Internet.

7

8       **Background of the Invention:**

9       As used herein the term viewer refers to an individual who views or looks at a web  
10      page using a program such as one of the commercially available web browsers. Co-  
11      pending patent application serial number 08/787,979 filed 1/22/97 entitled "Internet  
12      Advertising System" describes a system for presenting advertisements to viewers who  
13      access web sites on the Internet (i.e. the World Wide Web). The present invention is  
14      an improvement to the system shown in the above referenced patent application

15

16      The Hyper Text Transfer Protocol (HTTP) and the Hyper Text Mark Up Language  
17      (HTML) provide a mechanism whereby one web site can easily link to a remote server.  
18      The HTTP mechanisms for referencing and obtaining material from a remote server is  
19      useful in providing advertising material for display to viewers. There are commercially  
20      available systems that provide advertising material for web sites from a central server.  
21      Various web pages have links to this central server. With such an arrangement, when  
22      a viewer accesses a particular web page, a central server provides an advertisement  
23      that the viewer sees on the web page.

24

25      Using standard HTTP facilities it is possible to track when a particular viewer accesses  
26      a web site and thus it is possible to compile a data base which in essence provides a

1 profile of the sites a particular viewer has accessed using the same browser.  
2 Furthermore, it is known that types of viewers generally access particular categories of  
3 web sites. The capabilities inherent in the World Wide Web for tracking the sites that a  
4 viewer has seen provides a mechanism for targeting particular advertisements to  
5 particular types of viewers.

6

7 There are prior art systems that provide advertisements from a central server that has  
8 a database of information on viewers. A database of viewer information can be  
9 compiled from a variety of sources including the information about a viewer that is  
10 available when a viewer accesses a server. In such prior art systems, the  
11 characteristics of the viewer as provided by the data base of viewer information  
12 determines the particular advertisement which is displayed when a particular viewer  
13 who accesses a web site. Other information such as the characteristics of the web site  
14 can also be used to determine which advertisement a viewer will see when a web site  
15 is accessed. Using such systems advertisers can target advertisements by criteria  
16 such as web site category, geographic location of the viewer, the operating system of  
17 the viewer's computer, the type of browser which the viewer is using, the internet  
18 domain type of the viewer, etc.

19

20 Advertisers who use such prior art systems must specify in advance, the targeting  
21 criteria they want to use for their advertisements. The central server then provides  
22 advertisements to viewers based upon: (a) the targeting criteria established by the  
23 advertisers, (b) the information which the central server has in its data base  
24 concerning the particular viewer, (c) information about the web site that has been  
25 accessed by the viewer, and (d) other information available to the central server such  
26 as the time of day.

1

2

3 The previously referenced co-pending patent application describes a more complex  
4 system for providing advertisements from a central advertising server to viewers who  
5 access web sites. With the system shown in the referenced co-pending patent  
6 application the system evaluates, in real time, bids submitted by different advertisers in  
7 order to determine which particular advertisement will be displayed to a viewer.

8

9 The characteristics of each opportunity to present an advertisement to a viewer (that  
10 is, the characteristics of what is herein termed a view-op) includes information such as  
11 the characteristics of the particular web page being accessed, the characteristics of  
12 the viewer including demographic information about the viewer, and information about  
13 other sites this viewer has accessed in the past.

14

15 With the invention shown in the referenced co-pending application each advertiser  
16 provides one or more "proposed bids" which specify how much the advertiser is willing  
17 to pay for displaying a particular advertisement in response to a view-op with certain  
18 characteristics. Each proposed bid specifies a price or amount that the advertiser is  
19 willing to pay for the opportunity to display an advertisement (a) to a viewer who has a  
20 particular set of characteristics and (b) on a web site and web page that meets a  
21 particular set of criteria. Each proposed bid can be dependent upon or require  
22 satisfaction of various criteria that must be met in order for a bid of a particular amount  
23 to be submitted. For example a bidder might specify that the first one thousand times  
24 when a view-op meeting certain criteria occurs, a bid of five cents will be submitted,  
25 and each time thereafter that a view-op meeting the criteria occurs a bid of one cent  
26 will be submitted. The amount bid for a view-op can be dependent on as many criteria

1 as the advertiser cares to specify. Another example is that an advertiser might bid ten  
2 cents if the view-op were from a viewer who had recently visited a particular web page  
3 and one cent for the same view-op if the viewer had not recently visited the particular  
4 web page. Yet another example of a parameter that could be specified in a proposed  
5 bid is the rate at which viewers "click" on an advertisement to obtain more information  
6 about what is shown in the advertisement. The rate at which viewers "click" on an  
7 advertisement to access another site linked to the advertisement is often referred to as  
8 the "click-through rate". The bidding parameters can be either simple or complex.

9

10 With the system shown in the co-pending application when a view-op arises, the  
11 system evaluates the characteristics of the view-op compared to the specifications of  
12 proposed bids. Next, the bid selection logic selects the highest bid from the various  
13 available bids and the advertisement that has the highest bid for the particular view-op  
14 is displayed.

15

16 **Summary of the Present Invention:**

17 The present invention is applicable to a system that includes: (a) a web server system  
18 which stores advertisements in data bases, (b) bidding agents which submit bids to  
19 display advertisements in view-ops which have certain specifications, and (c) bid  
20 selection logic which decides which bid to accept for each particular view-op. With the  
21 present invention when a view-op occurs which meets the specifications in a bid, the  
22 view-op is further evaluated in terms of the comparative effectiveness of the particular  
23 advertisements on each of the sites on which the advertisement was previously  
24 displayed. The frequency of the advertisement is increased on sites that have proved  
25 effective and decreased on sites that have a lower effectiveness. The present  
26 invention thus adds an additional parameter that is considered and evaluated on a real

1 time basis to determine if a particular advertisement should be displayed in response  
2 to a particular view-op. This additional parameter takes into consideration the  
3 effectiveness of this particular advertisement on the sites where it was previously  
4 displayed.

5

6 **Brief Description of the Drawings:**

7 Figure 1 is a prior art system diagram.  
8 Figures 2A and 2B are flow diagrams of the operations of the prior art system.  
9 Figures 3A and 3B are flow diagrams of the present invention.

10

11 **Description of a preferred embodiment:**

12 The present invention is an improvement on the type of prior art system shown and  
13 described in co-pending patent application serial number 08/787,979 filed 1/22/97 and  
14 entitled "Internet Advertising System" which is assigned to the same assignee as is the  
15 present application. The above referenced co-pending application is hereby  
16 incorporated herein by reference in its entirety. In order to explain the principles of the  
17 present invention, a simplified overall block diagram of the prior art system is shown in  
18 Figures 1 and a simplified block diagram of the operation of the prior art system is  
19 shown in Figures 2A and 2B.

20

21 After the operation of the overall prior system is described with reference to Figures 1,  
22 2A, and 2B the preferred embodiment of the present invention will be described with  
23 reference to Figures 3A and 3B. The present invention relates to an improvement in  
24 the bid selection logic 16C that is shown in Figure 1.

25

1 The system shown in Figures 1 operates as follows: A human viewer 10 utilizes a  
2 client web browser 11 to access a web page 12 on a web site 14. The web page 12 is  
3 transmitted to browser 11 in a conventional manner. Web page 12 includes an HTML  
4 reference to a file (i.e. an advertisement) located on an advertising web server system  
5 16. The client web browser 11 has what is known in the art as a "cookie" 11A, which  
6 provides information from browser 11 to the web server system 16. The client web  
7 browser 11, the cookie 11A, the web site 14 and the web page 12 are all conventional  
8 and in widespread use. For example, the client web browser 11 could be one of the  
9 commercially available web browsers, for example, the commercially available and  
10 widely used web browser marketed by Netscape Communications Corp. under the  
11 trademark "Netscape Navigator" or the browser marketed by Microsoft Corporation  
12 under the trademark "Internet Explorer". The web site 14 and the web page 12 could  
13 be any of the thousands of web sites and web pages which are part of the World Wide  
14 Web and which have HTML references to advertisements which are located on a  
15 remote server.

16 Web page 12 includes an HTML reference to an advertisement stored on advertising  
17 web server system 16. Each time client web browser 11 displays web page 12, the  
18 human viewer 10 will see an advertisement which is provided by advertising web  
19 server system 16. Such HTML references are in widespread use and they are  
20 implemented using conventional HTML tags. Advertising web server system 16  
21 includes a database of advertisements 16A, a database of viewer information 16B, and  
22 bid selection logic 16C. The bid selection logic 16C receives bids from bidding agents  
23 30A to 30Z which in turn receive information concerning proposed bids from bid input  
24 system 18. For purposes of illustration only three identical bidding agents 30A, 30B  
25 and 30Z are specifically shown. The reference number 30 will be used to refer to a  
26 typical bidding agent. It should be understood that the system could include any

1    number of bidding agents. For example, a system could include several thousand  
2    bidding agents 30. Bid input system 18 provides bidding agents 30 with proposed bids  
3    which specify how much should be bid for view-ops with particular characteristics.  
4    Each bidding agents 30 evaluates each view-op to determine if the view-op meets the  
5    criteria specified in a particular proposed bid and if so how much should be bid.  
6  
7    Each bidding agent 30 evaluates a view-op with respect to one proposed bid to  
8    determine if a bid should be submitted. Each proposed bid includes a list of  
9    parameters that specify the particular type of viewer that the advertiser wants to reach.  
10   For example, a proposed bid might specify that the advertiser is willing to pay five  
11   cents for the opportunity to place an advertisement on a web page which is accessed  
12   by a viewer who has accessed three financial web pages and an automotive web page  
13   within the last week.  
14  
15   In general the system includes one bidding agent 30 for each proposed bid. Each  
16   advertiser would have an associated bidding agent 30 for each ad campaign the  
17   advertiser wants to conduct. Advertisers submit proposed bids to their associated  
18   bidding agents for evaluation against view-ops. Bidding agents 30 can be simple or  
19   complex and if desired they can have the ability to evaluate more than one proposed  
20   bid to determine which bid should be submitted to the bid selection logic 16C.  
21  
22   When a view-op presents itself (i.e. when viewer 10 accesses a web page 11 which  
23   contains an HTML reference to server system 16) the advertising web server system  
24   16 performs four operations:  
25         (1) It updates the information about the viewer that is in database 16B.

1                         (2) It sends information concerning the view-op to the bidding agents 30. The  
2 information sent includes information that the server system 16 received from  
3 browser 11 and information in database 16B. Bidding agents 30 in turn decide  
4 which bids to submit to bid selection logic 16C.

5                         (3) It compares various bids received from bidding agents 30 in order to  
6 determine which advertisement to display. (As explained later, with the present  
7 invention, additional information is considered in order to determine which  
8 advertisement should be displayed) and

9                         (4) It sends the appropriate advertisement from data base 16A to browser 11.

10  
11 The operations performed by advertising web server system 16 are shown in Figures  
12 2A and 2B. Figure 2A shows how server system 16 uses the information from cookie  
13 11A to update the database of viewer information 16B to reflect the fact that this  
14 particular viewer has accessed this particular web page. The operations proceed as  
15 shown by blocks 201 to 203. Block 201 indicates that a viewer has selected web page  
16 12 and that the selected web page has been transmitted to the viewer's browser 11.  
17 As indicated by block 202, web page 12 has an HTML reference to a file on server  
18 system 16 using conventional HTML techniques. Block 203 indicates that the server  
19 16 then obtains data from cookie 11A to update the database of viewer information  
20 16B.

21  
22 When a viewer 10 accesses web page 12, which has an HTML reference to server  
23 system 16, the system determines which advertisement from database 16A to present  
24 to the viewer. The manner in which the system performs these operations is shown  
25 by block diagram 2B. For example, one advertiser might have submitted a proposed  
26 bid to bidding agent 30A which specified that he is willing to pay five cents for

1 displaying an ad to a viewer who has accessed at least three financial oriented web  
2 sites within the last week. Another advertiser might have submitted a proposed bid to  
3 bidding agent 30B specifying that he is willing to pay six cents for displaying an  
4 advertisement to a viewer that has accessed at least three financial oriented web sites  
5 within the last five days. When a view-op occurs which is initiated by a viewer 10 who  
6 has accessed three financial oriented web sites in the last five days, bidding agents  
7 30A and 30B would determine that the particular view-op satisfies the criteria specified  
8 by both advertisers. Both bids would be submitted to bid selection logic 16C, and bid  
9 selection logic 16C would then select the highest bid, and the advertisement specified  
10 by that advertiser would be displayed to the viewer. The criteria specified by the  
11 advertisers may be much more complex and involve many more parameters than  
12 those given in the simple example specified above. However, notwithstanding the  
13 complexity of the proposed bids and the number of parameters specified in each  
14 proposed bid, the basic operations performed by bidding agents 30 and by bid  
15 selection logic 16C are as illustrated in the above simple example.

16

17 As shown in Figure 2B, a cycle of operation begins (block 210) when a viewer 10  
18 selects a web page 12 which has a HTML reference to web server system 16, that is,  
19 when a view-op occurs. It is noted that this occurs in real time and it can take place  
20 thousands of times per second. Block 211 indicates that the web server system 16  
21 sends information concerning the view-op and related information in the database 16B  
22 to the bidding agents 30. The bidding agents 30 compare the information about the  
23 view-op to the proposed bids that have been submitted by advertisers. That is, the  
24 bidding agents 30 determine if the characteristics of the view-op meet the criteria in the  
25 proposed bids and if so they submit bids to bid selection logic 16C (block 213). As  
26 shown by block 214, the bid selection logic 16C compares various bids and selects the

1 highest bid and therefore an advertisement for display. The appropriate advertisement  
2 called for by the winning bid is then sent from database 16A to browser 11 (block 215).

3

4 Block 212 indicates that each advertiser submits proposed bids. Each bid includes  
5 various parameters that, for example, specify the type of web page on which the  
6 advertiser wants to advertise and an amount, (i.e. the dollar amount) which the  
7 advertiser is willing to pay for having a particular advertisement displayed

8

9 In order to understand the power of the type of system shown in Figures 1 and 2, it is  
10 important to realize that the bidding agents 30 evaluate proposed bids in  
11 microseconds, that is, in real time. The rate at which "hits" on web pages occur (i.e.  
12 the rate at which viewers access web pages that have HTML reference to server  
13 system 16) can be in the order of thousands per second. Thus, the evaluation of  
14 proposed bids is performed very quickly in real time. Proposed bids can contain  
15 parameters which specify that a proposed bid will in effect change in real time. For  
16 example a proposed bid might specify that for the first 1000 matching view-ops, the  
17 proposed bid will be five cents and for the next 1000 matching view-ops the proposed  
18 bid will be four cents. The actual submission of proposed bids by advertisers and the  
19 rate at which advertisers can change their proposed bids is measured in minutes  
20 compared to the rate at which the system evaluates proposed bids which is on the  
21 order of microseconds.

22

23 The operation of the browser 11, the operation of the web server 14, and the manner  
24 in which web pages produce HTML references to web server system 16 using the  
25 HTTP protocol and HTML mark up language are described in numerous published  
26 books such as: "HTML Source Book A Complete Guide to HTML" by IAN S. Graham,

1 published by John Wiley and Sons (ISBN 0 471-11849-4) or "The Internet Compete  
2 Reference" by Harley Hahn and Rick Stout, published by Osborne McGraw-Hill, ISBN  
3 0 07-881980-6. Numerous other books are also available which describe the HTTP  
4 protocol. Such books describe how a browser, such as 11, can access a web page,  
5 such as web page 12, which in turn has an HTML reference to a file (i.e. an  
6 advertisement) stored on a server such as advertising server system 16.

7

8 The present invention provides an additional parameter that is taken into account in  
9 determining which advertisement will be displayed in response to a particular view-op.  
10 The additional parameter provided by the present invention is a parameter that is  
11 based upon the effectiveness of a particular advertisement on a particular web site in  
12 comparison to the effectiveness of this same advertisement on the other web sites  
13 where it has been displayed. The following highly structured and simplified example  
14 illustrates the operation of the present invention. The operation of the invention as  
15 applied to a "real-world" situation will be explained later.

16

17 Consider the following situation: an advertiser wants to have an advertisement  
18 displayed 10,000 times per day for a 10 day period (that is, 100,000 time) in response  
19 to view ops that meet certain criteria.

20 For this example assume:

21 (a) that the advertiser bids ten cents for each of these view-ops.  
22 (b) that view-ops that meet the specifications in the bid are on average occurring on  
23 1000 sites at a rate of 40 view-ops per day per site.  
24 (c) that the view-ops occur evenly spaced during the day and that the view ops occur  
25 in an even stream from the sites. That is the view-ops occur in an orderly sequence  
26 such as site1, site2, site3.....site 1000, site 1, site2, site3, .....site 1000.

1 (d) that for the view-ops on 500 of these sites, some other advertiser has a higher bid.

2

3 Thus there will be 500 sites, each receiving 40 view-ops per day which fit the ad's  
4 criteria and where this advertiser's bid is the highest bid.

5

6 With the prior art system, the advertisement would be displayed 20 times per day on  
7 each of the 500 sites. That is, the advertisement would be displayed 50 percent of the  
8 times that view-ops meeting the criteria occur. By displaying the ad 50% of the time  
9 that appropriate view-ops are presented the advertising campaign lasts the ten days in  
10 accordance with the original specifications provided by the advertiser.

11 Note: 20 view-ops per day times 500 sites times 10 days equals 100,000 view-ops.

12

13 With the present invention the above example would be handled as follows:

14 The first 1000 opportunities to display the advertisement are chosen using the old  
15 technique described above. This is termed an initialization period and it is used to  
16 obtain some data upon which subsequent decisions can be based.

17

18 When the 1001st view-op is encountered the system makes the following calculation:

19 Each site where the advertisement was presented during the initialization period is  
20 evaluated to determine the number of "click throughs" that resulted from the  
21 advertisements displayed on that site. Next the number of "click throughs" that would  
22 have resulted is calculated for each site based on the assumption that each  
23 opportunity to display on that site was taken. This gives a number which represents  
24 the "relative goodness" of each site.

25

26 Let us assume that the goodness numbers are as follows:

1       For one hundred sites (called Sites A) the goodness is 10  
2       For one hundred sites (called Sites B) the goodness is 8  
3       For one hundred sites (called Sites C) the goodness is 5  
4       For 200 sites the goodness is 1  
5  
6       The selection criteria for sites A is set to 100 percent.  
7       The selection criteria for sites B is set to 80 percent  
8       The selection criteria for sites C is set to 50 percent  
9  
10      The selection criteria for the remaining sites is set to 10 percent in order to continue  
11      gathering data from these sites for future calculations. The percentages of all sites is  
12      chosen so that at the present rate of view-ops, the total view-ops specified in the bid  
13      will be reached in the desired time period.  
14  
15      The above calculation is re-made each time a new viewing opportunity is presented.  
16      Thus in the example given above the calculation is made approximately ninety nine  
17      thousand times. It should be noted that sites not used for advertisements as a result  
18      of the calculations made as described above are made available to the next lower  
19      bidder and that in the placement of advertisements on these sites, the process  
20      described above, is repeated.  
21  
22      It might seem that with the present invention a great deal of calculating is made in  
23      order to determine which advertisement should be placed in response to a view-op.  
24      However, it should be considered that in practice advertisers pay up to a few cents for  
25      presenting

1 particular advertisements on particular sites. With modern day computers the cost of  
2 making the type of calculations required by the present invention are in the range of or  
3 less than mills (i.e. tenths of a cent) rather than cents

4

5 The present invention optimizes the placement of advertisements, that is,  
6 advertisements are placed on sites where they are most effective. As described  
7 above, the optimization is based upon "click-through" rate. It is noted that the system  
8 could similarly optimize placement of advertisements based on a wide variety of other  
9 criteria. For example, instead of making the calculations based upon click-through  
10 rate, the calculations could be made based upon a measure of telephone inquiries  
11 made as a result of advertisements, or upon the number of sales that result directly  
12 related to an advertisement. Any measurable criteria specified by an advertiser could  
13 be used in place of the click through rate described above. It is also noted that as  
14 described above, the initial selection of what advertisement to place on a site is based  
15 upon a bidding or auction system. It is noted that the present invention could also be  
16 applied in situations where the selection criteria is something other than a bidding  
17 system. However, the initial selection is made as to which advertisement to place in  
18 response to a view-op, optimization could be achieved by calculating the relative  
19 goodness of placing advertisements on various sites as described herein and using  
20 this parameter in the selection process.

21

22 In some circumstances, a system might not include enough computational power to  
23 make a calculation each time a view-op occurs. In such a system, the calculations  
24 described herein could be made every other, every third, or on some other schedule.  
25 Naturally, limiting the frequency of the calculations would somewhat decrease the  
26 effectiveness of the system.

1  
2 Figures 3A and 3B are flow diagrams showing the operation of the present invention.  
3 Figure 3A shows the operation of the invention during the initialization period. This  
4 period continues until an advertisement is displayed 1000 times (or until an  
5 advertisement has been displayed for a pre-specified percent of the total number of  
6 impressions desired). For the present embodiment it is assumed that each  
7 advertisement is scheduled for display at least ten thousand times. Thus the  
8 initialization period can extend for up to ten percent of the times that an advertisement  
9 is displayed. It is however, noted that in practice, most Internet advertisements are  
10 displayed many more than 1000 times, thus, the initialization process takes much less  
11 than ten percent of the total view-ops. The length of the initialization period is  
12 arbitrary, so long as it is long enough to give some valid data to use in the initial  
13 calculations.

14  
15 During the initialization period the results achieved by each advertisement in the form  
16 of "click throughs" is evaluated. As previously explained, while the present  
17 embodiment utilizes "click throughs" as a measure of the effectiveness of an  
18 advertisement in certain situations other measurements could be used. For example,  
19 in a situation where an advertisement results in a request for literature, the number of  
20 requests for literature could be a measure. Other measures of the effectiveness of  
21 advertisements could also be devised.

22  
23 After the initialization period the process continues as shown in Figure 3B. The series  
24 of steps shown in Figure 3B is performed as each view-op that meets a bid's  
25 specification becomes available. The steps shown in Figure 3A and 3B will now be  
26 explained in detail.

1  
2     The steps shown in Figure 3A are performed during the initialization period. As  
3     indicated by blocks 301, 303 and 305, when a view-op becomes available, its  
4     properties are compared to the properties set out in the various bids, and the highest  
5     matching bid is selected. Next as indicated by block 307, a determination is made as  
6     to whether or not this view-op is needed to meet the schedule set out in the winning  
7     bid. If it is not needed, this view op is assigned to the next lower matching bid as  
8     indicated by block 309. If it is needed to meet the schedule, a check is made to  
9     determine if the initialization period is complete. If the initialization is not complete,  
10    the advertisement is displayed as indicated by block 312. As indicated by block 315, if  
11    the initialization period is complete, the process switches to the procedure shown in  
12    Figure 3B.

13  
14    Figure 3B shows the procedure that is followed after the initialization period. Steps  
15    321, 323, and 325 are identical to the corresponding steps shown in Figure 3A and  
16    previously explained. Next as indicated by block 331, the system looks at the results  
17    achieved at each site where an advertisement was previously displayed and the  
18    results achieved are examined. In the simplest case this would be the number of  
19    "click-throughs" which resulted from the advertisement. That is, the number of times a  
20    viewer clicked on the advertisement in order to be linked to the advertiser's web site.  
21    The actual number of click-throughs is adjusted to take into account the fact that not  
22    each appropriate view-op was selected in step 327. For example, if:  
23                 (a) the advertisement was displayed one hundred times on a particular site and  
24                 five click throughs resulted,

1                   (b) only fifty percent of the view-ops had been selected for display of this  
2                   advertisement (that is, only fifty percent of the view-ops were selected in  
3                   previous steps 307 and 335),

4                   then the relative goodness number would be "ten" for this site

5

6                   Block 333 indicates that the selection or scheduling criteria for each site is set based  
7                   upon the goodness numbers calculated in step 331. The percentage of view-ops  
8                   scheduled for each site is scaled so that these values are in proportion to the  
9                   "goodness" numbers and so that the total number of placements desired by the  
10                  advertiser will be met if the situation were to remain stable at the present values. It  
11                  must however be recognized that while at each point these numbers are established  
12                  on the basis that the situation will remain stable, the values are recalculated as each  
13                  view-op occurs.

14

15                  Block 335 indicates that a determination is then made based on the new scheduling  
16                  and selection criteria. If it is determined that this view-op should be taken, the  
17                  advertisement is displayed as indicated in block 339. After the advertisement is  
18                  displayed, the system waits for the next appropriate view-op and the procedure is  
19                  repeated. If the determination in block 335 results in a decision that the view-op  
20                  should not be taken, the view-op is assigned to the next lower bid and the procedure is  
21                  repeated for that bid.

22

23                  The flow diagrams shown in Figure 3A and 3B can be programmed in any appropriate  
24                  computer language. The particular language taken would be determined by the  
25                  particular computer system being used. Fast personal computers and servers are

1 available. Such servers would normally be programmed using a language such as  
2 C++.  
3 The actual coding of the steps shown in Figures 3A and 3B is conventional.  
4  
5 It should be noted that it is herein assumed that a viewer always accesses the World  
6 Wide Web using the same browser, so that the cookie in a browser accurately reflects  
7 what a viewer has done. It is also assumed that only one viewer uses a particular  
8 browser, again so that the cookie in the browser accurately reflects what the particular  
9 viewer has done. Some inaccuracy in the calculations naturally results since the  
10 above assumptions are not always true. However, the resulting inaccuracy merely  
11 detracts from the overall efficiency of the advertising programs. Using the invention  
12 described herein nevertheless makes advertising more effective than it would be if the  
13 technique were not used.  
14  
15 While the invention has been shown and described with respect to a preferred  
16 embodiment thereof, the scope of the applicant's invention is limited only by the  
17 appended claims. Various changes in form and detail can be made without departing  
18 from the spirit and scope of the invention.

1

2 I claim:

3

4 1) A system for making advertisements available to web sites on the Internet which

5 includes:

6 a web server which stores advertisements,

7 means for supplying selection criteria for view-ops which have particular

8 characteristics,

9 bid selection logic which makes calculation as each view-op is presented to

10 determines if an advertisement should be supplied in response to a particular view-op,

11 said calculations taking into account the results achieved by each display of the

12 particular advertisement on the same site previously.

13

14

15 2) An Internet advertising system which includes

16 bid selection logic that schedules advertisements on the sites that meet bid

17 specifications based upon the results achieved by displaying the same advertisement

18 on sites previously.

19

20 3) The system recited in claim 2 wherein said bid section logic makes a calculation of

21 said schedule when each view-op appears after an initialization period.

22

23 4) The method of supplying advertisements to web sites on the World Wide Web which

24 includes the steps of comparing the properties of each view-op to the characteristics

25 set out in a selection criteria for advertising, and which schedules advertisements on

1 web sites based upon the results achieved by previous advertisements places on each  
2 of the web sites where the advertisement was previously displayed.

3

4 5) An Internet advertising system that includes:

5 a web server system which stores advertisements and data bases,  
6 bidding agents which submit bids to display advertisements in view-ops which have  
7 certain specifications, and

8 bid selection logic which decides which bid to accept for each particular view-op:  
9 said bid selection logic including evaluation logic operable when a view-op occurs  
10 which meets the specifications in a bid, for evaluating the comparative effectiveness  
11 of the particular advertisements on each of the sites on which the advertisement was  
12 previously displayed and wherein the frequency of the advertisement is increased on  
13 sites that have proved effective and decreased on sites that have a lower  
14 effectiveness.

15

16 6) The method recited in claim 4 wherein where after the properties of a view-op are  
17 compared to the characteristics set out in a plurality of bids for advertising, and the  
18 advertisement is displayed in response to the highest bid in accordance with a  
19 schedule.

20

21 7) The method recited in claim 6 wherein said results achieved are calculated based  
22 upon what would have happened if the advertisement were displayed on each  
23 appropriate view-op rather than in accordance with said schedule.

24

25 8) The method recited in claim 4 which includes an initialization period wherein said  
26 advertisement is not selected based upon the results previously achieved.

1

2 9) The method recited in claim 8 wherein after said initialization period, said results are  
3 calculated each time a view-op occurs.

4

5 10) The system recited in claim 5 wherein said evaluation logic is only operative after  
6 an evaluation period.

7

8 11) The system in claim 5 wherein said evaluation logic taken into consideration the  
9 action taken by a viewer in response to viewing an advertisement.

10

11 12) The system recited in claim 1 wherein the selection criteria is a monetary bid.

12

13 13) The system recited in claim 4 wherein said section criteria is a monetary bid.

1/5

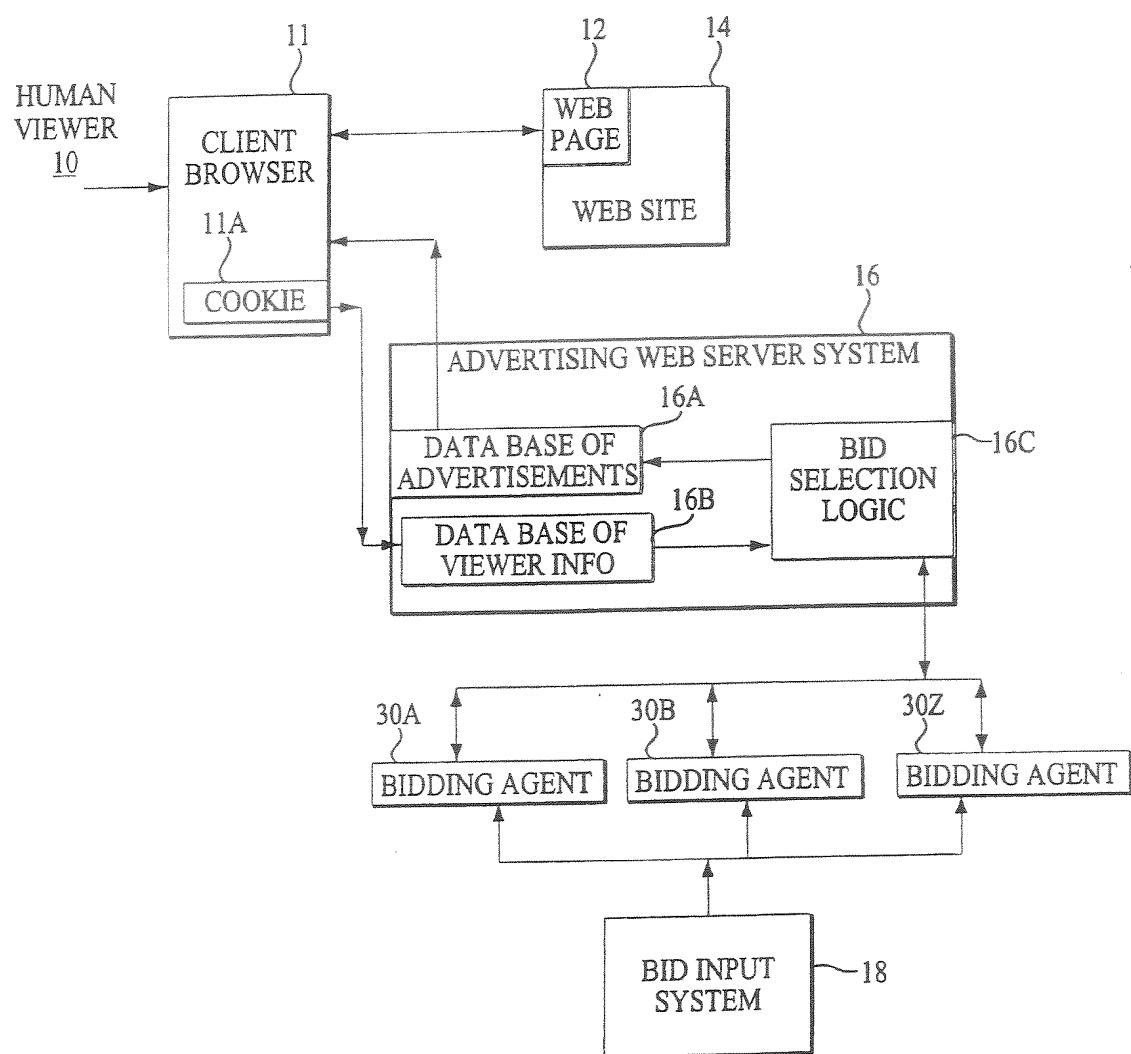


FIG. 1

2/5

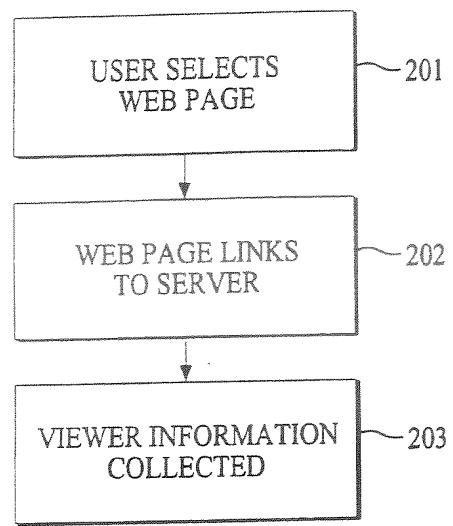


FIG. 2A

3/5

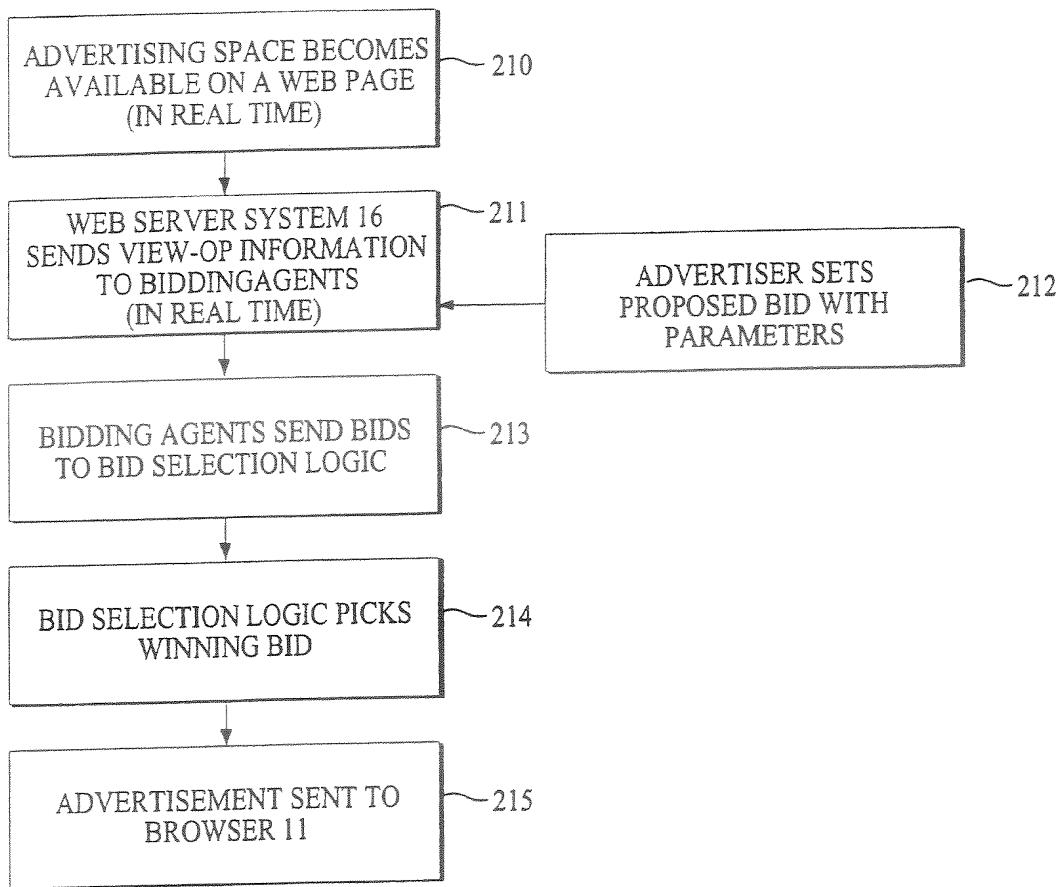


FIG. 2B

4/5

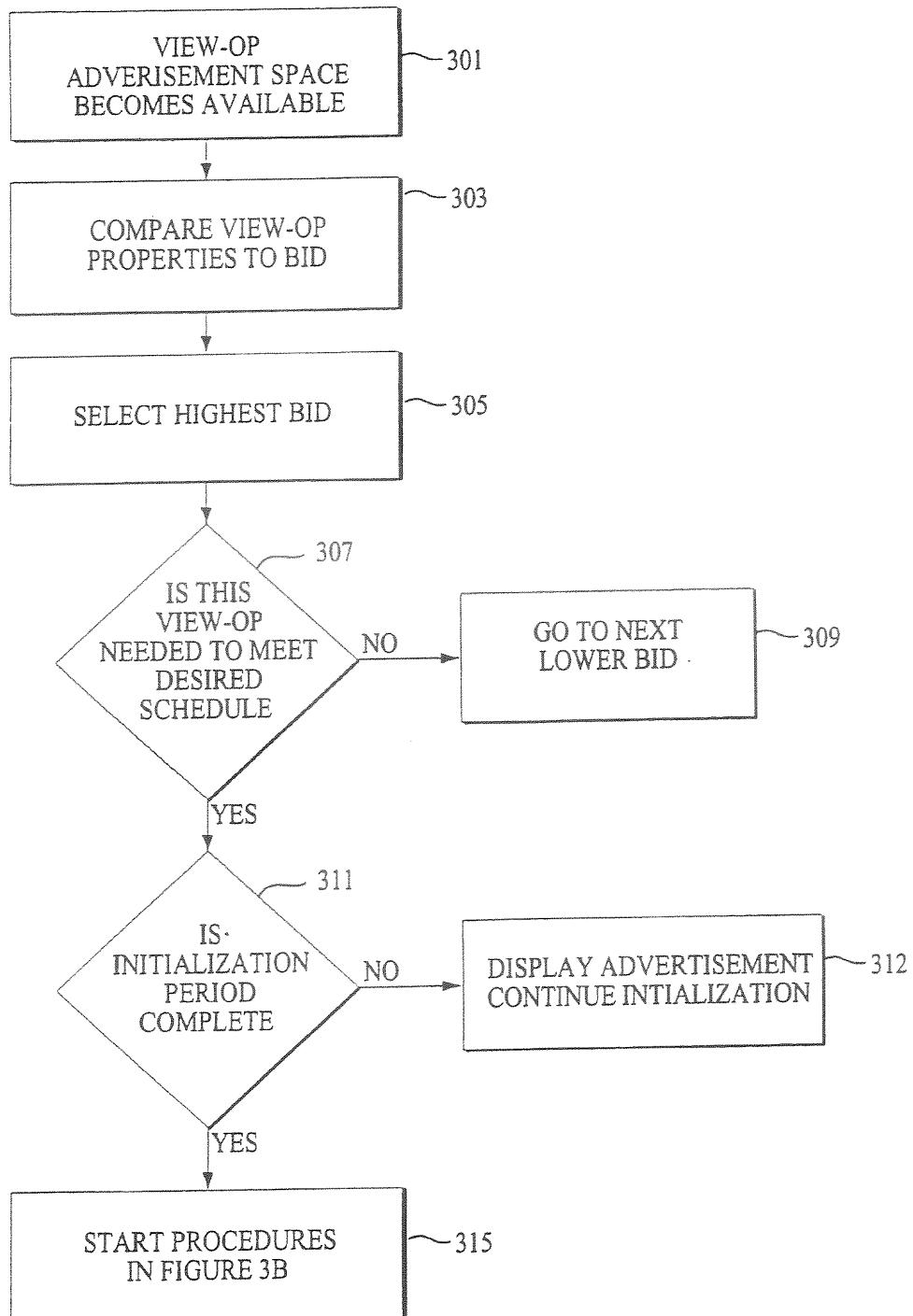


FIG. 3A

5/5

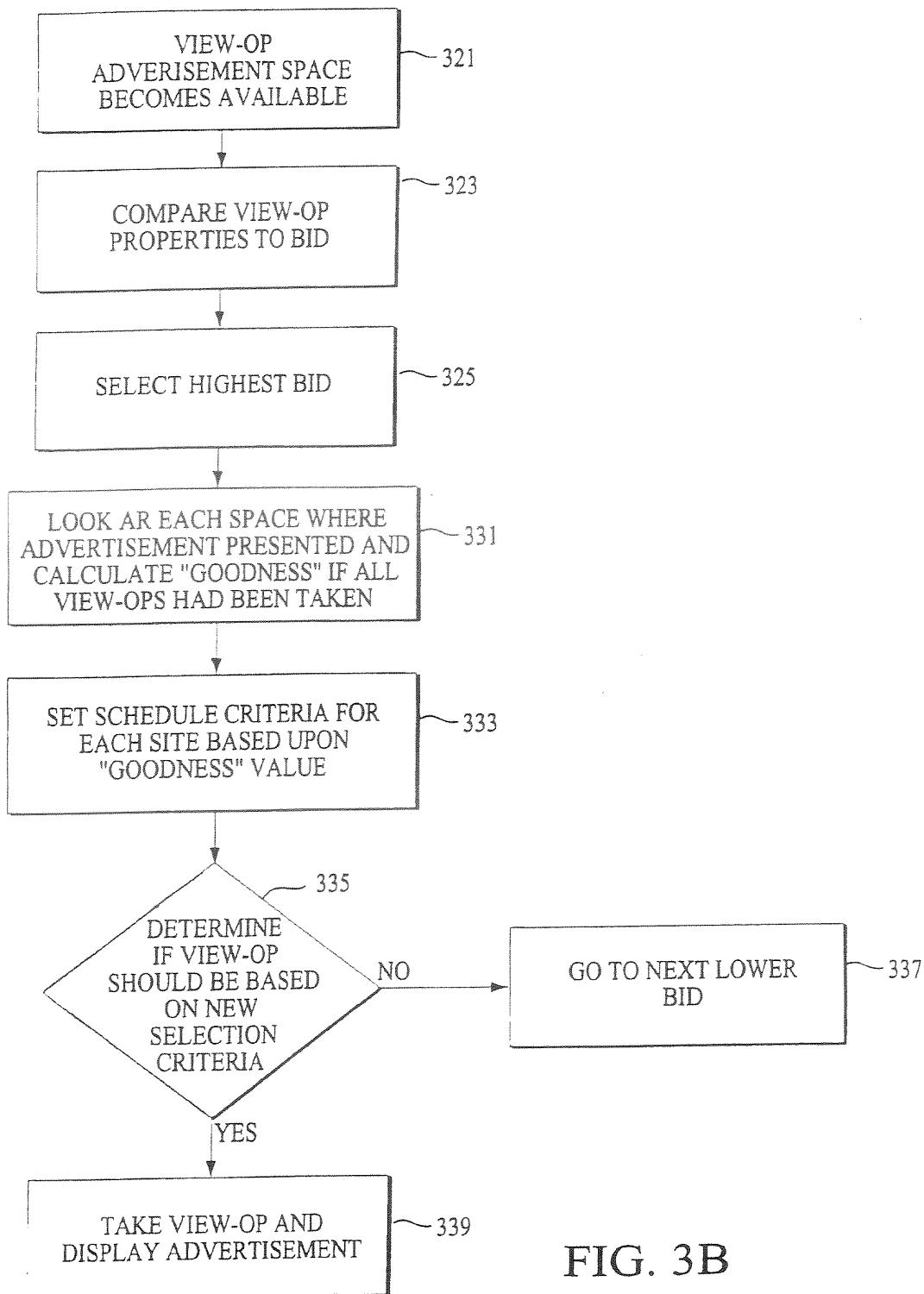


FIG. 3B

## INTERNATIONAL SEARCH REPORT

International application No. PCT/US99/29419
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## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 13/00, 17/60, 19/00  
US CL : 705/10, 14, 26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/10, 14, 26, 27, 37, 400

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DERWENT, DIALOG, DR-LINK

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim N
Y	US 5,515,270 A (WEINBLATT) 07 May 1996, col 12, lines 25-48.	2, 5-7, and 11
Y	US 5,710,884 A (DEDRICK) 20 January 1998, col 3, lines 6-28; col 4, line 36 - col 5, line 13; col 6, lines 1-32; col 8, lines 28-40; and col 17, lines 16-29.	1-13
Y	US 5,724,521 A (DEDRICK) 03 March 1998, col 3, lines 6-28; col 4, line 36 - col 5, line 64; col 6, lines 1-32; col 8, lines 28-40; and col 17, lines 16-29.	1-13
Y	US 5,774,868 A (CRAGUN et al) 30 June 1998, col 11, lines 8-35; col 11, line 36 - col 12, line 6; and col 17, lines 40-44.	2, 3, and 8-11

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:		
*A*	document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*B*	earlier document published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*L*	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*O*	document referring to an oral disclosure, use, exhibition or other means	*Z* document member of the same patent family
*P*	document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

07 APRIL 2000

Date of mailing of the international search report

25 APR 2000

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/29419

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 5,974,398 A (HANSON et al) 26 October 1999, col 3, lines 50-56; col 4, line 61 - col 5, line 50; col 7, lines 5-21; and col 8, lines 1-31.	1-13
Y,P	US 5,991,735 A (GERACE) 23 November 1999, col 2, lines 35-37; col 3, lines 18-36; col 4, lines 17-61; col 5, lines 54-67; col 12, lines 30-50; col 14, lines 17-45; col 15, lines 21-33; and col 17, lines 22-44.	1-13
Y,E	US 6,018,619 A (ALLARD et al) 25 January 2000, col 2, lines 17-35 and col 7, line 51- col 8, line 3.	1-13